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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/626,534	07/25/2003	Yasuo Yoda	03500.017431.	1177

5514 7590 03/04/2005

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EXAMINER	
LEE, PETER	

ART UNIT	PAPER NUMBER
2852	

DATE MAILED: 03/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/626,534	YODA ET AL.	
	Examiner	Art Unit	
	Peter Lee	2852	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 January 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Specification

1. Applicants proposed amendments to the specification filed on January 10, 2005 have been reviewed, however are not considered fully acceptable. It can be seen that applicant is going through the specification to change the units of surface resistivity from [Ω] to [Ω/□] which is acceptable, however applicant fails to find all such instances. Examiner requires applicant to amend the specifications to change on page 34 line 23 of the original specification the unit from "[Ω]" to --[Ω/□]-- to be consistent with the rest of the specification.

2. Also, it seems in the applicants request for amendment of the specification, there is a typographical error regarding the request to amend the paragraph starting at page 23, line 20. In the final sentence of the amended paragraph, applicant makes a typographical error, it is requested to change the error from "[Ω?cm] to --[Ω•cm]--.

Drawings

3. It would be acceptable for figure 4 to be labeled with --Background Art--.

Claim Objections

4. Applicants request to the amended claims have been reviewed, however are not deemed acceptable. Applicant has not satisfied the original request for amending claim 8. It is requested by the examiner to further amend the currently amended claim 8 as follows:

On page 12 line 3 of the amended claims, change "N/m^2" with --[Ω/□]-- to be consistent with the units used for surface resistivity.

On page 12 line 5 of the amended claims, change [Ω] with --[N/m^2]-- to be consistent with a unit for contact pressure.

Claim Rejections - 35 USC § 103

5. Claims 1, 2, 4, and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hara et al. (US pa 2001/0026709) in view of Hosoya et al. (US pn 6246845). Hara teaches an image forming apparatus (abstract first sentence) comprising: An endless semiconductive belt used as an intermediate transfer belt (page 4 paragraph [0054]) (ie. image bearing member bearing an image); and a bias roll (Fig. 5 part 26) (ie. transfer member) contacting with the semiconductive belt (Fig. 5 part 24) in a contact portion (Fig. 5; the nip in between rollers 244 and 26); wherein the image on said semiconductive belt is transferred to a paper (Fig. 5 part P) (ie. transfer medium) in said contact portion by said bias roll, a Young's modulus of said semiconductive belt is taught to be greater than 500 MPa (page 3 paragraph [0037]; this teaching includes values that satisfy the limitation of the Young's modulus being in the range 2×10^8 [N/m^2] to 9×10^9 [N/m^2]) (where 1 Pa = 1 [N/m^2]).

6. As to claim 2, Hara teaches the use of a semiconductive belt to be used as the intermediate transfer belt, used to carry the image from the photosensitive body to be transferred onto a recording medium such as paper (page 4 paragraph [0054]) (ie. image bearing member is a belt).

7. As to claim 4, Hara teaches the use of a backup roll (Fig. 5 part 244) (ie. opposing member) that is positioned opposes to the bias roll (Fig. 5 part 26 (ie. transfer roll) with said belt

interposed there between, and wherein said backup roll supports said belt (Fig. 5; apparatus arrangement has roll 244 positioned to aid in supporting the belt 24).

8. As to claim 5, Hara teaches the use of the semiconductive belt as an intermediate transfer member (page 4 paragraph [0054]), and the record medium being paper (page 12 paragraph [0189]) (ie. transfer medium is a transfer material).

9. Hara does not specifically teach, pertaining to claim 1, a contact pressure between the image bearing member and the transfer member being between 4.0 x 10^4 [N/m^2] and 7.3 x 10^4 [N/m^2].

10. It is Hosoya who teaches having a pressure roller (Fig. 2 part 25) (ie. transfer member) and a backup roller (Fig. 2 part 24) being in contact with a pressure of between 500 to 10000 g/cm^2. Because the backup roller 24 is located within the intermediate transfer medium (Fig. 2 part 23) (ie. image bearing member) that is responsible for transferring the image from the latent image carrier (Fig. 2 part 22), it is seen that in fact the intermediate transfer medium is in contact with the pressure roller. After converting the values taught by Kosoya into [N/m^2] by using the conversion (1 kg/cm^2 = 1 [N/m^2]), it is observed that the values taught by Hosoya are within the range limitation given in the claim.

11. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to utilize such a range of resitivity values for the semiconductive belt when used in such an image forming apparatus. One of ordinary skill in the art would have been motivated to do this because the range taught ensures a high level of transfer efficiency close to 100% (col. 7 lines 33-40).

12. Claims 3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hara in view of Hosoya as applied to claims 1, 2, 4, and 5 above, and further in view of Tarnawskyj (US 6397034).

13. Hara in view of Hosoya teach all of the limitations as laid out above.

14. Hara in view of Hosoya does not teach the use of a single layer intermediate transfer belt (ie. image bearing member). It is Tarnawskyj who teaches the use of a single layer transfer belt for use in an electrostatographic reproducing apparatus (fig. 3; note: col. 5 lines 45-52).

15. It would have been obvious to one of ordinary skill in the art to modify the intermediate transfer medium taught by Hara to be a single layer intermediate transfer belt as taught by Tarnawskyj. One of ordinary skill in the art would have been motivated to use a single layer intermediate transfer belt made of a fluorinated carbon filled polyimide for its high tensile property which optimizes the film stretch registration and transfer conformance (col. 6 lines 1-6).

16. Hara in view of Hosoya does not teach the image bearing member having a range of surface resistivities as laid out in the claims. It is Tarnawskyj who teaches a range of surface resistivity of an intermediate transfer belt being preferably between $10^{6} - 10^{12} \Omega / sq.$ (col. 10 lines 60-62) (col. 10 lines 60-62) (ie. $10^{8} \Omega$/sq. to $10^{15} \Omega$/sq.).

17. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the intermediate transfer member taught by Hara in view of Hosoya to have the range of surface resistivity as taught by Tarnawskyj. One of ordinary skill in the art would have been motivated to do so because such a range of surface resistivities ensures sufficient image transfers by preventing air breakdown (col. 2 lines 20-29).

18. Claims 8-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hara et al. in view of Hosoya et al. and in view of Tarnawskyj.

19. Hara teaches an image forming apparatus (abstract first sentence) comprising: An endless semiconductive belt used as an intermediate transfer belt (page 4 paragraph [0054]) (ie. image bearing member bearing an image); and a bias roll (Fig. 5 part 26) (ie. transfer member) contacting with the semiconductive belt (Fig. 5 part 24) in a contact portion (Fig. 5; the nip in between rollers 244 and 26); wherein the image on said semiconductive belt is transferred to a paper (Fig. 5 part P) (ie. transfer material) in said contact portion by said bias roll.

20. As to claim 9, Hara teaches the use of a semiconductive belt to be used as the intermediate transfer belt, used to carry the image from the photosensitive body to be transferred onto a recording medium such as paper (page 4 paragraph [0054]) (ie. image bearing member is a belt).

21. As to claim 11, Hara teaches the use of a backup roll (Fig. 5 part 244) (ie. opposing member) that is positioned opposes to the bias roll (Fig. 5 part 26 (ie. transfer roll) with said belt interposed there between, and wherein said backup roll supports said belt (Fig. 5; apparatus arrangement has roll 244 positioned to aid in supporting the belt 24).

22. As to claim 12, Hara teaches the use of the semiconductive belt as an intermediate transfer member (page 4 paragraph [0054]), and the record medium being paper (page 12 paragraph [0189]) (ie. transfer medium is a transfer material).

23. Hara does not teach a contact pressure between the image bearing member and the transfer member being between $4.0 \times 10^4 [N/m^2]$ and $7.3 \times 10^4 [N/m^2]$. It is Hosoya who teaches having a pressure roller (Fig. 2 part 25) (ie. transfer member) and a backup roller (Fig. 2

part 24) being in contact with a pressure of between 500 to 10000 g/cm^2. Because the backup roller 24 is located within the intermediate transfer medium (Fig. 2 part 23) (ie. image bearing member) that is responsible for transferring the image from the latent image carrier (Fig. 2 part 22), it is seen that in fact the intermediate transfer medium is in contact with the pressure roller. After converting the values taught by Kosoya into [N/m^2] by using the conversion (1 kg/cm^2 = 1 [N/m^2]), it is observed that the values taught by Hosoya are within the range limitation given in the claim.

24. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to utilize such a range of resitivity values for the semiconductive belt when used in such an image forming apparatus. One of ordinary skill in the art would have been motivated to do this because the range taught ensures a high level of transfer efficiency close to 100% (col. 7 lines 33-40).

25. Hara in view of Hosoya does not teach the intermediate transfer medium having a range of surface resistivities as laid out in the claims. It is Tarnawskyj who teaches a range of surface resistivities of an intermediate transfer belt being preferably between $10^6 - 10^{12}\,\Omega/sq.$ (col. 10 lines 60-62) (ie. $10^8\,\Omega$/sq. to $10^{15}\,\Omega$/sq.).

26. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the intermediate transfer member taught in Hara to have the range of surface resistivity as taught by Tarnawskyj. One of ordinary skill in the art would have been motivated to do so because such a range of surface resistivities ensures sufficient image transfers by preventing air breakdown (col. 2 lines 20-29).

27. Hara in view of Hosoya does not teach the use of a single layer intermediate transfer belt. It is Tarnawskyj who teaches the use of a single layer transfer belt for use in an electrostatographic reproducing apparatus (fig. 3; note: col. 5 lines 45-52).

28. It would have been obvious to one of ordinary skill in the art to modify the intermediate transfer medium taught by Hara to be a single layer intermediate transfer belt as taught by Tarnawskyj. One of ordinary skill in the art would have been motivated to use a single layer intermediate transfer belt made of a fluorinated carbon filled polyimide for its high tensile property which optimizes the film stretch registration and transfer conformance (col. 6 lines 1-6).

29. Claims 1 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rimai et al. (US pn 5807651) in view of Watanabe et al. (US pg pub 2002/0164177).

30. Rimai teaches an electrostatographic apparatus (title) (ie. image forming apparatus) comprising: A photoconductive primary image member (Fig 1 part 1)(ie. image bearing member bearing an image); and an intermediate transfer drum (Fig. 1 part 2) (ie. transfer member) contacting with the photoconductive primary image member in a contact portion (Fig. 1; the contact nip seen in between parts 1 and 2); wherein the image on said photoconductive primary image member is transferred to the intermediate transfer drum at the said contact portion (col. 5 lines 43-47) and then the image is further transferred to a receiving sheet at a transfer station (Fig. 1 part 25), a Young's modulus of said photoconductive primary image member is taught to be greater than 10 GPa (col. 4 line 23; this teaching sufficiently satisfies the limitation of the Young's modulus being in the range 2×10^8 [N/m^2] to 9×10^9 [N/m^2], where 1 Pa = 1 [N/m^2]).

31. As to claim 7, Rimai teaches the image bearing member being of photoconductive nature (col. 5 line 21-22), and the transfer medium being an intermediate transfer drum (col. 5 lines 53-57).

32. Rimai does not teach the photoconductive primary image member being in contact with the intermediate transfer drum within a pressure range limitation of 4.0 x 10^4 [N/m^2] and 7.3 x 10^4 [N/m^2].

33. It is Watanabe who teaches having a photosensitive body being in contact with the intermediate transfer member at an average contact pressure of 1 kg/cm^2 that converts to 9.8 x $10^4 N/m^2$ (p. 3 paragraph [0065]), which is sufficiently within the claimed range in claim 1.

34. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the contact pressure at the transfer nip of the invention taught by Rimai to have the contact pressure as taught in Watanabe. A person of ordinary skill in the art would have been motivated to use a contact pressure as taught by Watanabe to ensure good primary transfer between the photosensitive drum and the intermediate transfer member (page 3 paragraph [0065]).

35. Claims 8 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ito et al. (US pn 6253038) in view of Tarnawskyj et al. and in view of Watanabe et al. (US pg pub 2002/01641177).

36. Ito teaches an image forming apparatus (abstract first sentence) comprising: A photosensitive drum (Fig. 1 part 1) (ie. image bearing member bearing an image); and

An intermediate transfer drum (Fig. 1 part 6) (ie. transfer member) contacting with the photosensitive drum (Fig. 1) in a contact portion (Fig. 1 reference N); wherein the image on said photosensitive drum is transferred to the intermediate transfer drum at nip N (Fig. 1) and then onto a transfer material such as paper at nip M (Fig. 1).

37. As to claim 13, Ito teaches the image bearing member being a photosensitive drum (col.2 line 58) and the transfer medium being a intermediate transfer drum (col. 2 line 61-63) (ie. intermediate transfer member).

38. Ito does not teach the intermediate transfer medium having a range of surface resistivities as laid out in the claims. It is Tarnawskyj who teaches a range of surface resistivities of a intermediate transfer belt being preferably between $10^6 - 10^{12}\,\Omega/sq.$ (col. 10 lines 60-62) (ie. $10^8\,\Omega$/sq. to $10^{15}\,\Omega$/sq.).

39. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the intermediate transfer member taught in Hara to have the range of surface resistivity as taught by Tarnawskyj. One of ordinary skill in the art would have been motivated to do so because such a range of surface resistivities ensures sufficient image transfers by preventing air breakdown (col. 2 lines 20-29).

40. Ito does not teach the photoconductive primary image member being in contact with the intermediate transfer drum within a pressure range limitation of 4.0 x $10^4\,[N/m^2]$ and 7.3 x $10^4\,[N/m^2]$.

41. It is Watanabe who teaches having a photosensitive body being in contact with the intermediate transfer member at an average contact pressure of 1 kg/cm^2 that converts to 9.8 x $10^4\,N/m^2$ (p. 3 paragraph [0065]), which is sufficiently within the claimed range in claim 1.

42. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the contact pressure in the transfer nip of the invention taught by Ito in view of Tarnawskyj to have the contact pressure as taught by Watanabe. A person of ordinary skill in the art would have been motivated to use a contact pressure as taught by Watanabe to ensure good primary transfer between the photosensitive drum and the intermediate transfer member (page 3 paragraph [0065]).

Response to Arguments

43. Applicant's arguments filed January 10, 2005 have been fully considered but they are not persuasive regarding claims 1, 2, 4, and 5.

44. Applicant argues that the prior art reference Hosoya et al. does not disclose the required pressure between an image bearing member and a transfer member. However, Hosoya teaches a contact pressure of 500-10,000 g/cm^2 which falls between the range given in the claim limitations. Also, this contact pressure taught by Hosoya is between that of a backup roller (ie. image bearing member) and a pressure roller (ie. transfer member). It can be seen in figure 3 of Hosoya that the backup roller 24 lies within the intermediate transfer roller 23 (ie. holds the toner image), and therefore the pressure between the backup roller and pressure roller must go through the intermediate transfer roller, which then meets the limitation of the pressure between an image bearing member and a transfer member. The rejection for these claims remain as follows:

45. Applicant also argues on p.17 lines 5-10, that the teachings of Rimai et al. do not disclose

the limitations of the claimed Young's modulus surface hardness values. It is seen however that the teaching of an image bearing member taught in Rimai having a Young's modulus being greater than 10 GPa successfully teaches the upper limit of the range given by the applicant in claim 1.

46. Applicant's arguments, see p. 18 lines 12-13 and lines 16-17 and p. 19 lines 16-20 of the applicants response, filed 10 January, 2005, with respect to the rejection(s)of claim(s) 8, and 3 and 10 under 35 USC 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Hara et al. (US 2001/0026709) in view of Hosoya et al. (US 6,246,845) and further in view of Tarnawskyl et al. (US 6,397,034). The new rejection are as follows:

47. Applicant's arguments, see on p. 18 lines 18-21, argues that the teachings of Watanabe disclose a line pressure instead of a surface contact pressure as in the claim limitations, filed January 10, 2005, with respect to the rejection(s)of claim(s) 7 under 35 USC 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Rimai et al. (US pn 5807651) in view of Watanabe et al. (US pg pub 2002/0164177). The new rejection is as follows:

48. Applicant's arguments, see on p. 18 lines 18-21, argues that the teachings of Watanabe disclose a line pressure instead of a surface contact pressure as in the claim limitations, also on p. 8 lines 16-17 applicant argues that Ito et al. does not disclose a surface resistivity, filed January 10, 2005, with respect to the rejection(s)of claim(s) 8 and 13 under 35 USC 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Ito et al. (US 6,253,038) in view of Tarnawskyj et al. and further in view of Watanabe et al. (US pg pub 2002/0164177). The new rejection is as follows:

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter Lee whose telephone number is 571-272-2846. The examiner can normally be reached on mon-fri 9:00 am-5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Arthur Grimley can be reached on 571-272-2136. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PL 2/22/2005

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